



## National Aeronautics and Space Administration

### Fleet Alternative Fuel Vehicle Program Report for Fiscal Year 2006 February 15, 2007

This National Aeronautics and Space Administration (NASA) Fleet Alternative Fuel Vehicle (AFV) Report for Fiscal Year (FY) 2006 presents the Agency's data on the number of alternative AFVs acquired in FY 2006 and its planned and projected acquisitions for FY 2007 and FY 2008. This report has been developed in accordance with the Energy Policy Act of 1992 (EPAct) (42 U.S.C. 13211-13219) as amended by the Energy Conservation Reauthorization Act of 1998 (Public Law 105-388) (ECRA), Energy Policy Act of 2005 (EPAct), and Executive Order (E.O.) 13149. NASA exceeded the 75 percent AFV-acquisition requirement for 157 vehicles by acquiring 381 total credits in FY 2006. Attachment A provides detailed information on the number and types of light-duty vehicles leased or purchased by NASA in FY 2006.

#### Legislative Requirements

EPAct requires that 75 percent of all covered light-duty vehicles acquired for Federal fleets in FY 1999 and beyond must be AFVs (where the fleets have 20 or more vehicles, are capable of being centrally fueled, and are operated in a metropolitan statistical area with a population of more than 250,000 based on the 1980 census). Certain emergency, law enforcement, and national defense vehicles are exempt from this requirement. The ECRA or 1998 amended EPAct to allow one alternative fuel vehicle acquisition credit for every 450 gallons of pure biodiesel fuel consumed in vehicles over 8,500 pounds gross vehicle weight rating. "Biodiesel credits" may fulfill up to 50 percent of an agency's EPAct requirements. E.O. 13149 directs federal agencies operating a fleet of 20 or more vehicles within the United States to reduce their annual petroleum consumption by at least 20 percent by the end of FY2005 (compared to FY 1999 levels) by using alternative fuels in AFVs more than 50 percent of the time, improving the average fuel economy of new light-duty petroleum-fueled vehicle acquisition by 1mpg by FY 2002 and 3 mpg by FY 2005, and using other fleet efficiency measures.

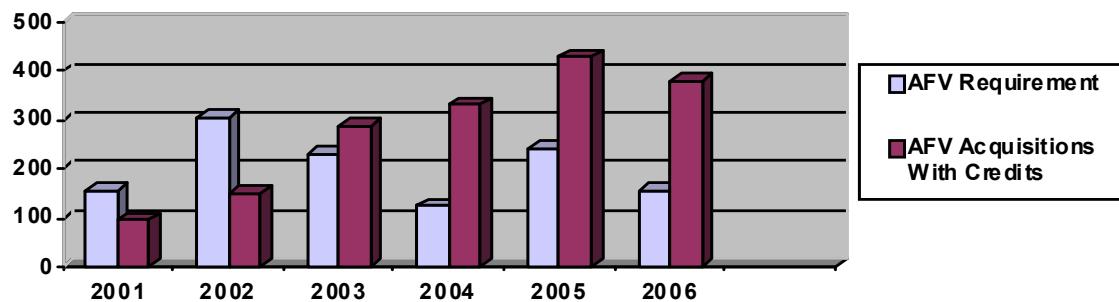
#### NASA Approach to Compliance with EPAct and E.O. 13149

To achieve compliance with the legislative mandates of EPAct and E.O. 13149, NASA has developed an aggressive compliance strategy including the acquisition of 75 percent of new, covered light-duty vehicles as AFVs, and use alternative fuel in these vehicles a majority of the time. NASA will also continue to acquire light duty vehicles with a higher fuel economy, and further reduce petroleum consumption by using biodiesel fuel in most diesel vehicles.

NASA also recognizes that AFV fueling infrastructure is extremely limited in most areas of the country. As such NASA has or intends to develop AFV fueling infrastructure at those NASA Center's where it is not readily commercially available. Additionally, each NASA Center now reports periodically during NASA's internal institutional review on compliance with EPAct and E.O. 13149.

### NASA Fleet Compliance for FY 2006

This is a graphical depiction of AFV acquisitions by NASA's fleet in FY 2001 through 2006. NASA acquired 427 light-duty vehicles (LDVs) during FY 2007 of which 209 were EPAct covered LDVs. Of the total 427 LDVs acquired, 323 were AFVs. NASA also gained 57 credits for biodiesel fuel use and for acquiring dedicated light, medium, and heavy-duty AFVs, for a total of 381 credits, thereby exceeding EPAct requirements of 75% by 182 percentage points.



### Summary of NASA's FY 2006 AFV Acquisitions

A number of vehicles that were leased and purchased by NASA were not "covered" vehicles. Of the total of 427 light-duty vehicles acquired in FY 2007, the following were not counted for compliance:

- 162 were in fleets located outside covered metropolitan statistical areas (MSA's)
- 45 were exempt as law enforcement vehicles
- 11 were exempt due to geographic assignment

### NASA's Fleet AFV Acquisitions for FY 2007and FY 2008

Attachments B and C provide detailed information on planned and projected vehicle acquisitions for NASA in FY 2008 and FY 2009. In FY 2008, NASA is planning to acquire a cumulative total of 307 light-duty vehicles of which 271 will be EPAct covered. NASA is planning of acquiring 283 total AFVs during FY 2008, exceeding the EPAct requirement of 152 AFV's.

## **Special Projects of the NASA Fleet Related to AFV and Infrastructure Acquisitions**

Significant AFV fueling infrastructure projects are currently underway at several NASA Centers. During FY 2006 NASA brought on line one additional E-85 fueling stations at Kennedy Space Center with a 10,000 gallon tank capacity. This station will decrease NASA's petroleum consumption and increase our percentage of AFV fuel used in AFV's.

### **Petroleum Savings**

New petroleum savings baselines were established derived from FY 2005 data. By mandate of E.O 13423, NASA is required to decrease petroleum consumption by 2% annually. Since it is difficult, if not impossible, to project petroleum savings for FY 2007 and FY 2008 based upon the estimated AFV acquisitions, improvements in fuel economy, and fleet efficiency, petroleum savings are reported for only FY 2006 based on actual data provided.

Covered Petroleum Consumption in GGE					
	Baseline FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
<b>Gasoline</b>		770,847			
<b>Diesel</b>		301,092			
<b>B20</b>		99,859			
<b>Total</b>	<b>1,275,831</b>	<b>1,171,798</b>			
<b>Target</b>		1,250,314	1,224,797	1,199,281	1,173,764
<b>Compliant</b>		<b>Yes</b>			

### **Alternative Fuel Use by NASA in FY 2006**

New alternative fuel use baselines were established derived from FY2005 data. By mandate of E.O.13423, NASA is required to increase alternative fuel use by 10% annually.

The majority of vehicles acquired by NASA and other Federal fleets are leased from GSA, and the leasing contract folds in the maintenance and fuel costs for the vehicles. This is accomplished by the use of a GSA credit card that the fleets use to purchase alternative fuel. However, since product code standards are not uniform among suppliers of alternative fuels (e.g., ethanol or E-85), it is difficult for credit vendors to accurately track the purchase of alternative fuels with this credit card. The exception may be natural gas, which is usually purchased at a local utility refueling site, allowing the fleets to contact the utility for an accurate accounting of purchased fuel. Thus, alternative fuel use data is approximated from proportioning GSA data and internal record keeping efforts.

Alternative Fuel Consumption in GGE					
	Baseline FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
CNG		15,760			
LNG		0			
LPG		10,661			
E-85		199,227			
Electric		0			
M-85		0			
B100		29,015			
Hydrogen		0			
<b>Total</b>	<b>148,433</b>	<b>254,663</b>			
<b>Target</b>		163,276	179,603	197,564	217,320
<b>Compliant</b>		<b>Yes</b>			

\*B100 is calculated at 20% of the reported B20 and 100% of the reported B100 fuel used in the Section III Actual Fuel Cost/Consumption by Fuel Type data input screen.

## Summary

As detailed in this report and the attachments, NASA exceeded the AFV acquisition requirements of EPAct in FY 2006 and projects to repeat this accomplishment in FYs 2007 and 2008. In addition, NASA fleets were able to meet the goal to reduce the agency's annual fleet petroleum consumption FY 2006. NASA did meet its goal for increase of alternative fuel use over FY 2005 by 72% over established baseline and is 56% ahead over the established FY 2006 target consumption.

NASA will continue to implement its strategy for complying with the requirements of Executive Order 13423, which will result in at least a 2% percent reduction in the fleet's annual petroleum consumption and increase alternative fuel use by 10% annually in FY 2007.

Actual National Aeronautics and Space Administration FY 2006 Vehicle Acquisitions				
Actual FY 2006 Light-Duty Vehicle Acquisitions				Total Vehicle Inventory
	Leased	Purchased	Total	
Total number of Light-Duty (8,500 GVWR) - Vehicle Acquisitions	412	15	427	2,414
Exemptions	Fleet Size	0	0	0
	Geographic	11	0	11
	Law Enforcement	45	0	45
	Non-MSA Operation (fleet)	159	3	162
	Non-MSA Operation (vehicles)	0	0	(n/a)
	EPACT Covered Acquisitions	197	12	209
Actual FY 2006 AFV Acquisitions				Total Vehicle Inventory
Vehicle	Leased	Purchased	Total	
Sedan CNG Bi-Fuel Subcompact	5	0	5	48
Sedan CNG Dedicated Subcompact	0	0	0	12
Sedan E-85 Flex-Fuel Subcompact	10	0	10	38
Sedan CNG Bi-Fuel Compact	1	0	1	25
Sedan CNG Dedicated Compact	1	0	1	0
Sedan E-85 Flex-Fuel Compact	46	0	46	287
Sedan E-85 Flex-Fuel Midsize	39	7	46	61
Sedan E-85 Flex-Fuel Large	4	0	4	2
Pickup 4x2 CNG Bi-Fuel	6	0	6	79
Pickup 4x2 CNG Dedicated	0	0	0	5
Pickup 4x2 E-85 Flex-Fuel	69	1	70	212
Pickup 4x2 LPG Bi-Fuel	0	0	0	20
Pickup 4x4 CNG Bi-Fuel	1	0	1	15
Pickup 4x4 CNG Dedicated	0	0	0	3
Pickup 4x4 E-85 Flex-Fuel	15	0	15	33
Pickup 4x4 LPG Bi-Fuel	0	0	0	1
SUV 4x2 E-85 Flex-Fuel	6	0	6	35
SUV 4x4 E-85 Flex-Fuel	16	0	16	54
Minivan 4x2 (Passenger) CNG Bi-Fuel	1	0	1	0
Minivan 4x2 (Passenger) E-85 Flex-Fuel	66	3	69	299
Minivan 4x2 (Cargo) E-85 Flex-Fuel	12	0	12	34
Van 4x2 (Passenger) CNG Bi-Fuel	0	0	0	2
Van 4x2 (Passenger) E-85 Flex-Fuel	1	0	1	8
Van 4x2 (Cargo) CNG Bi-Fuel	0	0	0	1
Van 4x2 (Cargo) E-85 Flex-Fuel	4	0	4	6
Van 4x2 (Cargo) LPG Bi-Fuel	0	0	0	14
Ambulance LPG Dedicated	0	0	0	1
Pickup MD CNG Bi-Fuel	5	0	5	13
Van MD (Passenger) CNG Bi-Fuel	0	0	0	34
Van MD (Passenger) CNG Dedicated	0	0	0	5
Van MD (Cargo) CNG Bi-Fuel	4	0	4	33
Van MD (Cargo) CNG Dedicated	0	0	0	5
Van MD (Cargo) LPG Bi-Fuel	0	0	0	5
MD 8,501-16,000 GVWR CNG Bi-Fuel	0	0	0	2
MD 8,501-16,000 GVWR LPG Bi-Fuel	0	0	0	2
<b>Total Number of AFV Acquisitions</b>	<b>312</b>	<b>11</b>	<b>323</b>	<b>1,394</b>
Zero Emission Vehicle Credits	0	0	0	
Dedicated Light-Duty AFV Credits	1	0	1	
Dedicated Medium-Duty AFV Credits	0	0	0	
Dedicated Heavy-Duty AFV Credits	0	0	0	

Biodiesel Fuel Usage Credits - Actual			57
Total AFV Acquisitions with Credits	313	11	381
AFV Percentage of Covered Light-Duty Vehicle Acquisition		182 %	

## Planned National Aeronautics and Space Administration FY 2007 Vehicle Acquisitions

Planned FY 2007 Light-Duty Vehicle Acquisitions				
		Leased	Purchased	Total
Total number of Light-Duty (8,500 GVWR) - Vehicle Acquisitions		304	3	307
Exemptions	Fleet Size	0	0	0
	Geographic	7	0	7
	Law Enforcement	25	0	25
	Non-MSA Operation (fleet)	74	0	74
	Non-MSA Operation (vehicles)	1	0	1
<b>EPACT Covered Acquisitions</b>		<b>197</b>	<b>3</b>	<b>200</b>
Planned FY 2007 AFV Acquisitions				
Vehicle		Leased	Purchased	Total
Sedan	CNG Bi-Fuel Subcompact	12	0	12
Sedan	E-85 Flex-Fuel Subcompact	5	0	5
Sedan	E-85 Flex-Fuel Compact	55	0	55
Sedan	E-85 Flex-Fuel Midsize	16	0	16
Pickup 4x2	E-85 Flex-Fuel	50	0	50
Pickup 4x2	LPG Bi-Fuel	0	3	3
Pickup 4x4	E-85 Flex-Fuel	13	0	13
SUV 4x2	E-85 Flex-Fuel	3	0	3
SUV 4x4	E-85 Flex-Fuel	9	0	9
Minivan 4x2 (Passenger)	CNG Bi-Fuel	2	0	2
Minivan 4x2 (Passenger)	E-85 Flex-Fuel	33	0	33
Minivan 4x2 (Cargo)	E-85 Flex-Fuel	10	0	10
Van 4x2 (Passenger)	CNG Bi-Fuel	1	0	1
Van 4x2 (Passenger)	E-85 Flex-Fuel	14	0	14
Van 4x2 (Cargo)	E-85 Flex-Fuel	18	0	18
Pickup MD	CNG Bi-Fuel	9	0	9
Van MD (Passenger)	CNG Bi-Fuel	3	0	3
Van MD (Cargo)	CNG Bi-Fuel	9	0	9
Van MD (Cargo)	LPG Bi-Fuel	0	3	3
MD 8,501-16,000 GVWR	CNG Bi-Fuel	3	0	3
<b>Total Number of AFV Acquisitions</b>		<b>265</b>	<b>6</b>	<b>271</b>
Zero Emission Vehicle Credits		0	0	0
Dedicated Light-Duty AFV Credits		0	0	0
Dedicated Medium-Duty AFV Credits		0	0	0
Dedicated Heavy-Duty AFV Credits		0	0	0
Biodiesel Fuel Usage Credits - Planned				75
<b>Total AFV Acquisitions with Credits</b>		<b>265</b>	<b>6</b>	<b>346</b>
<b>AFV Percentage of Covered Light-Duty Vehicle Acquisition</b>				<b>173 %</b>

## Projected National Aeronautics and Space Administration FY 2008 Vehicle Acquisitions

Projected FY 2008 Light-Duty Vehicle Acquisitions			
	Leased	Purchased	Total
Total number of Light-Duty (8,500 GVWR) - Vehicle Acquisitions	353	5	358
Exemptions	Fleet Size	0	0
	Geographic	10	0
	Law Enforcement	28	0
	Non-MSA Operation (fleet)	162	2
	Non-MSA Operation (vehicles)	1	0
<b>EPACT Covered Acquisitions</b>	<b>152</b>	<b>3</b>	<b>155</b>
Projected FY 2008 AFV Acquisitions			
Vehicle	Leased	Purchased	Total
Sedan CNG Bi-Fuel Subcompact	30	0	30
Sedan E-85 Flex-Fuel Subcompact	5	0	5
Sedan E-85 Flex-Fuel Compact	60	0	60
Sedan E-85 Flex-Fuel Large	26	0	26
Pickup 4x2 CNG Bi-Fuel	3	0	3
Pickup 4x2 CNG Dedicated	1	0	1
Pickup 4x2 E-85 Flex-Fuel	51	0	51
Pickup 4x2 LPG Bi-Fuel	8	3	11
Pickup 4x4 E-85 Flex-Fuel	16	2	18
Pickup 4x4 LPG Bi-Fuel	1	0	1
SUV 4x2 E-85 Flex-Fuel	2	0	2
SUV 4x4 E-85 Flex-Fuel	2	0	2
Minivan 4x2 (Passenger) CNG Bi-Fuel	2	0	2
Minivan 4x2 (Passenger) E-85 Flex-Fuel	37	0	37
Minivan 4x2 (Cargo) E-85 Flex-Fuel	3	0	3
Van 4x2 (Passenger) E-85 Flex-Fuel	4	0	4
Van 4x2 (Cargo) E-85 Flex-Fuel	5	0	5
Pickup MD CNG Bi-Fuel	2	0	2
Van MD (Passenger) CNG Bi-Fuel	5	0	5
Van MD (Passenger) LPG Bi-Fuel	0	2	2
Van MD (Cargo) CNG Bi-Fuel	5	0	5
MD 8,501-16,000 GVWR CNG Bi-Fuel	7	0	7
MD 8,501-16,000 GVWR LPG Bi-Fuel	1	0	1
<b>Total Number of AFV Acquisitions</b>	<b>276</b>	<b>7</b>	<b>283</b>
Zero Emission Vehicle Credits	0	0	0
Dedicated Light-Duty AFV Credits	1	0	1
Dedicated Medium-Duty AFV Credits	0	0	0
Dedicated Heavy-Duty AFV Credits	0	0	0
Biodiesel Fuel Usage Credits - Projected			58

Total AFV Acquisitions with Credits	277	7	342
AFV Percentage of Covered Light-Duty Vehicle Acquisition		221 %	